

## **Laser Technology**

At right is a new green microlaser introduced last year by Amoco Laser Company, Naperville, Illinois. At bottom right is the same company's breakthrough infrared diode-pumped microlaser. Both are spinoff products based on a laser concept originally developed at NASA's Jet Propulsion Laboratory for optical communications over interplanetary distances.

A laser is a device that emits a narrow and very intense beam of light or other radiation; the beams may be employed, for example, to transmit communications signals, to drill, cut or melt hard materials, or, in medical applications, to remove diseased body tissue.

Microlasers are revolutionary new miniaturized all-solid-state lasers that cover a broad portion of the wavelength spectrum and offer dramatically improved performance over traditional lasers. Amoco Laser Company, a leader in microlaser technology, offers 20 different microlaser products for an expanding range of applications that includes medical instrumentation and therapy, color separation equipment for graphics and printing, film reading and writing, advanced projection TV, telecommunications and optical memory storage, plus a variety of industrial R&D/production applications such as micromaterials processing, spectroscopic and analytical measurement, semiconductor processing and characterizing optical and electronic materials to determine quality.

Amoco Laser, a wholly-owned subsidiary of Amoco Corporation, was formed to commercialize a variety of laser-based technologies developed by Amoco Technology Company's Research Department. In addition to Amoco-developed technology, the company has also acquired other patents relating to solid-state lasers pumped by tiny diodes, including the NASA technology in the infrared and green microlasers.

That technology was developed at Jet Propulsion Laboratory by Donald L. Sipes, Jr. of California Institute of Technology (CalTech). Subsequently, NASA waived the patent rights to CalTech and CalTech licensed the technology to Amoco Laser. According to Sipes, the patent centers on the discovery that a diverging, elliptically-shaped laser beam, such as is emitted by a laser diode, can be used to pump a solid-state laser very efficiently and also produce a very narrow, ideal laser beam. Inventor Sipes has since joined Amoco Laser as manager of product development.

